Extended Phase 1 Update Report

Redmire Bridge, Northumberland

Northumberland County Council

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EXTENDED PHASE 1 SURVEY

Redmire Bridge, Lanehead, Northumberland

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1.0 EXECUTIVE SUMMARY

Total Ecology was commissioned by Northumberland County Council in January 2020 to undertake a desk based study and an extended Phase 1 update survey of Redmire Bridge, Lanehead, Northumberland. The approximate National Grid Reference for the centre of the site is **NY 78787 85876**. The survey is required prior to repair and maintenance works to the bridge. Surveys were completed on the bridge in 2016 and 2017 by Total Ecology Ltd, and these reports should be read in conjunction with this one, however as it has been over two years since the last survey, an update survey has been instructed.

The results obtained from the MAGIC search revealed one Site of Special Scientific Interest (SSSI) within 2km of the site known as Greenhaugh Meadow approximately 1.1km to the north east. Additionally, this area is also designated as North Pennine Dales Meadows (SAC).

The consultation with ERIC NE revealed three Northumberland Local Wildlife sites (NLWS) within 2km of the site. The Tarset Burn is located approximately 1.1km north of the site. Chirdon Burn lies approximately 900m south of the site flowing into the River North Tyne from the south. Hesleyside Mill lies approximately 1.3km south of the site. A summary of designated sites within 2km of the land in question is given in Table 1 below. Summarised data relating to other species of conservation concern is incorporated into the relevant species sections below.

No controlled invasive species were noted within the site boundary.

Ten main habitat land categories were identified on site under the Phase 1 system of habitat description. The survey was centred on Redmire Bridge itself prior to repair works being carried out. The bridge is of sandstone construction and carries a minor, single track tarmac road. The bridge has many features that have the potential to be used by roosting bats and birds. Beneath the bridge flows the Tarset Burn, a tributary of the River North Tyne, from roughly north east to south west. The burn is lined with broad-leaved woodland, which constitutes a Northumberland BAP habitat. The burn has potential to support riparian mammals, fish and white-clawed crayfish, with the presence of otter in the vicinity of the bridge being confirmed via spraint. The woodland and the bridge supported evidence for the presence of badgers. Adjacent habitats recorded include sheep grazed improved

grassland, a semi-improved grassland (previously recorded as improved), tall ruderal vegetation present along the roadside, a ditch which flows into the Tarset Burn, as well as fences, hardstanding and walls. The proposed works are likely to impact upon the bridge and potentially the woodland/trees closest to the bridge.

The bridge and surrounding habitats have potential to support several protected species. The Tarset Burn is suitable for otters, fish and white-clawed crayfish, whilst the woodland adjacent to the bridge is suitable for foraging mammals such as badgers, in addition to potential sett creation. The bridge itself and nearby trees are suitable to support nesting birds and/or roosting bats. The following recommendations are therefore made based upon the findings of the survey effort:

- Undertake a minimum of three nocturnal bat surveys;
- Undertake an otter and water vole absence/presence survey;
- Carry out a badger absence/presence survey;
- A red squirrel absence/presence survey is recommended for the adjacent trees;
- A white-clawed crayfish survey is recommended;
- Repairs to take place outside the bird nesting season (or checked by a suitable qualified ecologist prior);
- Undertake works outside main salmon spawning season;
- General pollution prevention protocols to be adopted.

Full details are provided in Section 5.

2.0 INTRODUCTION

2.1 Background

Total Ecology was commissioned by Northumberland County Council in January 2020 to undertake a desk based study and an extended Phase 1 update survey of Redmire Bridge, Lanehead, Northumberland. The approximate National Grid Reference for the centre of the site is **NY 78787 85876**. The survey is required prior to repair and maintenance works to the bridge. Surveys were completed on the bridge in 2016 and 2017 by Total Ecology Ltd, and these reports should be read in conjunction with this one, however as it has been over two years since the last survey, an update survey has been instructed.

2.2 Site Description

The site is located approximately 500 metres west of the hamlet of Lanehead and 26km north west of the town of Hexham in Northumberland.

The site consists of a bridge of sandstone construction supporting four arches spanning the Tarset Burn which flows roughly north east to south west. Tarset Burn is approximately 30m wide and relatively fast flowing (at the time of survey). It is a tributary of the River North Tyne, which it joins approximately 700m to the south west. Broad-leaved woodland is present along the banks of the burn to the north and south, with improved grassland grazed by sheep being the dominant habitat surrounding the site for a considerable distance. Overall the land around the site is rural, with the only built structures being small hamlets and farms/farming structures. Small pockets and corridors of woodland and hedgerows are scattered throughout the wider landscape, with larger woodland plantations located just over 2km to the north west and south west.

2.3 Survey Objectives

The principal objective of the ecological assessment was to characterise and map the habitats present within the site. In addition, the study area was assessed for features that would indicate the presence of protected species, habitats of nature conservation importance and the presence of non-native invasive species that could represent a constraint to development. Any trees and surrounding habitats were assessed in terms of their potential to support, or actual evidence of, roosting bats. This assessment will form the basis of recommendations for further survey work and/or mitigation and compensation for the species.

3.0 METHODOLOGY

3.1 Desk Based Study

An area search was conducted using the Multi Agency Geographic Information for the Countryside (MAGIC) website to ascertain whether there are any designated sites of interest, on or near the site being surveyed. Environmental Records Information Centre for the North East of England (ERIC) was contacted for records of protected species and sites within 2km of the site.

3.2 Extended Phase 1 Survey

The update ecological assessment took place on 16th January 2020 in accordance with the standard Phase 1 Habitat Survey methodology (JNCC, 2003). Previous surveys were undertaken in 2016 and 2017 by Total Ecology Ltd. The survey was carried out by Daniel Gray BSc and Jodi Bell MSc, both Assistant Ecologists with Total Ecology. The information collected during the survey was then approximately mapped and can be found in Figure 3, Appendix A.

3.3 Controlled Invasive Species

The site was surveyed during an Ecological Walkover survey for the presence of invasive non-native species including Japanese Knotweed *Fallopia japonica*, Himalayan Balsam *Impatians glandulifera* and Giant Hogweed *Heracleum mantegazzianum*, which are listed under Schedule 9 part ii of the Wildlife and Countryside Act 1981 (as amended). Under section 14 of the Act it is an offence to cause the spread or relocation of either species.

3.4 Protected Species and Other Species of Nature Conservation Importance

An appraisal of the habitats present on the site was undertaken during the Ecological Walkover survey, to identify whether there were any signs to suggest the presence of populations of legally protected species or other species of nature conservation importance including mammals, birds, reptiles, amphibians and invertebrates or that the features present could potentially provide these species with suitable habitats. Where possible, a buffer of 30m outside of the site boundary was also assessed for signs of badger.

3.5 Constraints and Assumptions

Due to the time of year some annual flowering species may be underrepresented. However due to the identification of a variety of common and widespread species,

habitats present and the experience of the surveyors, in addition to species lists collected from previous survey efforts, it is considered that there is sufficient information to produce a reasonable ecological assessment of the areas of site to be affected by the current proposals.

4.0 SURVEY RESULTS

4.1 Desk Based Study

The results obtained from the MAGIC search revealed one Site of Special Scientific Interest (SSSI) within 2km of the site known as Greenhaugh Meadow approximately 1.1km to the north east. Additionally, this area is also designated as North Pennine Dales Meadows (SAC).

The consultation with ERIC NE revealed three Northumberland Local Wildlife sites (NLWS) within 2km of the site. The Tarset Burn is located approximately 1.1km north of the site. Chirdon Burn lies approximately 900m south of the site flowing into the River North Tyne from the south. Hesleyside Mill lies approximately 1.3km south of the site. A summary of designated sites within 2km of the land in question is given in Table 1 below. Summarised data relating to other species of conservation concern is incorporated into the relevant species sections below.

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Table 1 Designated sites within 2km.

Site Name	**Designation**	**Approx. Distance from Site**	**Further Information**
Greenhaugh Meadow	SSSI	1.1km north east	Greenhaugh Meadow supports one of a small number of species-rich northern hay meadow communities known to remain in Northumberland. The distribution of this habitat, which is dependent upon traditional farming practises, has been considerably reduced due to agricultural intensification, particularly reseeding and the use of artificial fertilisers.

North Pennine Dale Meadows	SAC	1.1km north east	The site encompasses the range of variation exhibited by mountain hay meadows in the UK and contains the major part of the remaining UK resource of this habitat type. A wide range of rare and local meadow species are contained within the meadows, including globeflower *Trollius eruopaeus*, the lady's-mantle's *Alchemilla acutiloba*, *A. monticola* and *A. subcrenata*, as well as spignel *Meum athamanticum*.
Tarset Burn	LWS	1.1km north	Designated site of fauna and flora including European otter, water shrew, red squirrel and five species of bats (Brandt's, common pipistrelle, soprano pipistrelle, noctule and brown long-eared).
Chirdon Burn	LWS	900m south west	No information provided.
Hesleyside Mill	LWS	1.3km south east	No information provided.

4.2 Controlled Invasive Species

No Japanese Knotweed, Himalayan Balsam or Giant Hogweed species were noted within the site boundary.

4.3 Walkover Survey

In 2017, nine main habitat land categories were identified on site under the Phase 1 system of habitat description. These were:

- Broad-leaved woodland
- Built structure
- Ditch
- Fence
- Hard Standing

- Improved Grassland
- Running Water
- Tall Ruderal
- Wall

The 2020 update survey returned the following 10 habitats:

- Broad-leaved woodland
- Built structure
- Ditch
- Fence
- Hard Standing
- Improved Grassland
- Running Water
- Tall Ruderal
- Wall
- Semi-Improved Grassland

Target Notes

- 1 = Inundated field
- 2 = Otter spraint
- 3 = Mammal tracks under bridge (badger, fox and mole)
- 4 = Badger snuffle holes
- 5 = Dipper box

Appendix A shows the habitat map for the site whilst Appendix B gives selected photographs.

Broad-leaved woodland

Adjacent to both sides of the river is a mixture of broadleaved trees including ash *Fraxinus excelsior*, alder *Alnus glutinosa*, sycamore *Acer pseudoplatanus*, hazel *Corylus avellana* and willow *Salix spp.* The ground flora to the south of the site comprises of Greater Woodrush *Luzula sylvatica*, Smooth Rush *Juncus effusus*, Dogs Mercury *Mercurialis perennis*, Dandelion *Taraxacum officinale*, Lesser Celandine *Ficaria verna*, Common Dog Violet *Viola riviniana,* Spear Thistle *Cirsium vulgare*, Common Sorrel *Rumex acetosa*, Cocksfoot *Dactylis glomerata*, Yorkshire

Fog *Holcus lanatus*, Tufted Hair Grass *Deschampsia cespitosa*, Yarrow *Achillea millefolium*, Bramble *Rubus fruticosus,* Germander Speedwell *Veronica chamaedrys*, Barren Strawberry *Potentilla sterilis,* Creeping Bent *Agrostis stolonifera*, Snowdrop *Galanthus spp.*, Daffodil *Narcissus pseudonarcissus* and *Umbelliferae spp*.

Additional species noted during the 2020 survey include betony *Stachys officinalis*, nipplewort *Lapsana communis*, male fern *Dryopteris filix-mas*, Hart's-tongue fern *Asplenium scolopendrium*, primrose *Primula vulgaris*, wood sage *Teucrium scorodonia*, pignut *Conopodium majus*, foxglove *Digitalis purpurea* and both wood avens *Geum urbanum* and water avens *Geum rivale*. A potential badger sett was found to the west of the bridge within the woodland; however, it didn't appear to have been used recently at the time of the survey due to the presence of leaves and twigs within the hole. It is possible that it is prone to flooding during particularly high rainfall/river flow events.

This habitat has potential to support a range of foraging mammals including badger and red squirrel, as well as nesting birds and roosting bats.

Two alder trees in particular were noted to have moderate – high potential to support roosting bats due to the presence of rot holes and cracked/peeling bark (Figure 3, Appendix A), and should therefore be surveyed if there are plans for them to be removed

Built Structure

The built structure comprises the bridge itself. It is of sandstone construction with four arches spanning the Tarset Burn and supporting a minor road linking Redmire to the east to Rushend to the west. The bridge has features that may be suitable for roosting bats and nesting birds, such as crevices in the stonework and a Dipper nesting box (Target Note 5). Several mammal tracks relating to fox, mole and most notably badger were noted under the northernmost arch of the bridge (Target Note 3), otter spraint was found within the improved grass roadside verge on the bridge (Target Note 2).

Ditch

Along the western side of the road, north of the bridge, is a drainage ditch masked by tall ruderal vegetation which carries land run-off down into Tarset Burn.

Common reed *Phragmites australis* was noted growing alongside the ditch, particularly towards the north where it somewhat merges with tall ruderal vegetation.

Fence

Between the woodland and the adjacent sheep grazed fields is wooden fencing fixed with wire mesh and barbed wire.

Hard Standing

The road which crosses the bridge consists of tarmacadam covered ground. Hard standing typically has no ecological value.

Improved Grassland

Sheep grazed, improved grassland is present adjacent the woodland bordered bridge and Tarset Burn to the north and south, improved grassland is also present along the road verges to the east and west. Dominant grass species include perennial rye-grass *Lolium perenne* and cock's-foot *Dactylis glomerata*. False-oat grass *Arrhenatherum elatius*, crested dog's-tail *Cynosurus cristatus*, annual meado-grass *Poa annua* and Creeping buttercup *Ranunculus repens* is also present. Pasture areas dominate the south of Tarset Burn with ground flora species including common mouse-ear *Cerastium fontanum*, lesser celandine *Ficaria verna* and creeping buttercup. The grazed fields show signs of occasional waterlogging due to the presence of soft rush *Juncus effuses*, particularly in the north eastern field where the south west corner is dominated by *Juncus spp* and at the time of the survey had standing water approximately 10 – 20cm deep (Target Note 1). A single hawthorn tree *Crataegus monogyna* is present to the eastern extent of the surveyed area (though others are present further a long the road, beyond the surveyed area) within the roadside verge. Signs of badger (snuffle holes) were found at various points along the roadside verge, with some on the bridge itself (Target Note 4).

Running Water

The Tarset Burn, a tributary of the River North Tyne, flows through the site from roughly north east to south west. Due to recent rainfall, the river was fast flowing and approximately 30m wide. The banks adjacent to the burn are slightly sloped and vegetated with broad-leaved woodland. The burn has a stony substrate suitable for spawning fish and white-clawed crayfish, and the habitats present offer

suitable foraging and refugia opportunities for species such as otter or water vole. During the survey in 2016, otter spraint was recorded. Otter spraint was again noted in two separate locations in 2020. Signs of otter were found on a rock approximately 15m to the east of the bridge on the northern riverbank, and again within the grass verge on the bridge itself (Target Note 2).

The burn has potential to support riparian mammals such as otter and water vole, as well as other species such as white-clawed crayfish and fish.

Tall Ruderal

Lining the road and stretching along the north west section of the bridge is tall ruderal habitat dominated by nettle *Urtica dioica*, and rosebay willowherb *Chamaenerion angustifolium* with frequently occurring creeping thistle *Cirsium arvense*, cock's-foot *Dactylis glomerata*, false oat-grass *Arrhenatherum elatius* and yarrow *Achilea millefolium*. Occasionally, silverweed *Argentina anserine* and common knapweed *Centaurea nigra* occur within the vegetative composition.

Wall

Separating the road from the grazed fields are ~1.5m tall stone walls. Stone walls typically have low ecological value, though reptiles may utilise them for basking and shelter.

Semi-improved Grassland

The south eastern field appears to have developed from improved grassland, as assessed in 2017, to semi-improved grassland now. Species noted in addition to those found within the fields of Improved Grassland include Timothy grass *Phleum pratense*, fescue *Festuca sp*, ribwort plantain *Plantago lanceolata*, primrose *Primula vulgaris* and white clover *Trifolium repens*,

4.4 Controlled Invasive Species

No Japanese knotweed, Himalayan balsam or giant hogweed species were noted within the site boundary.

4.5 Protected Species and Species of Nature Conservation Importance

Breeding and wintering birds

All wild birds in the UK are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to intentionally kill, injure or take any wild bird or to take, damage or destroy the nest (whilst being built or in use) or its eggs.

Bird species listed in Schedule 1 of the 1981 Act, receive further protection which makes it an offence to intentionally or recklessly disturb these species while building a nest or in, on or near a nest containing eggs or young; or to disturb dependent young of such a bird.

Great tit *Parus major*, robin *Erithacus rubecula*, carrion crow *Corvus corone*, long-tailed tit *Aegithalos caudatus*, chaffinch *Fringilla coelebs*, buzzard *Buteo buteo* and pheasant *Phasianus colchicus* were observed on site. These species are both widespread and common species in Northumberland and are typical for the habitats present on site.

The ERIC consultation data revealed 38 bird records in 2017 and 68 records in 2020. Three of these records refer to Schedule 1 listed birds; red kite *Milvus milvus*, osprey *Pandion haliaetus* and barn owl *Tyto alba*.

The bridge and woodland have potential to support nesting birds and a nest box for dippers *Cinclus cinclus* is located beneath the bridge, though at the time of survey this was unused. The other habitats on site, in addition to the woodland, offer suitable foraging areas.

Mammals

Bats

All bat species and their roosts in Britain are protected under the Wildlife and Countryside Act 1981 (as amended) (WCA) through their inclusion on Schedule 5. The implementation of the Countryside and Rights of Way Act 2000 (CRoW 2000) has amended the WCA 1981 to include ‘reckless’ damage to, or destruction of a roost, disturbance of bats whilst in a roost.

Bats are also included on Annex IV of Council Directive 92/43/EEC of 21st May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora (known as the Habitats Directive). As a result of the United Kingdom ratifying this directive, all British bats are protected under The Conservation of Habitats and Species Regulations 2010. Combined, these make it an offence to kill, injure, capture or disturb bats or obstruct access to, damage or destroy roosts.

Paragraph 43 of the Regulations states: A person who deliberately disturbs wild animals of any such (European Protected) species, is guilty of an offence. For the purposes of this paragraph, the disturbance of animals includes in particular any disturbance which is likely: -

a. to impair their ability-
    i. To survive, to breed or reproduce, or to rear or nurture their young, or
    ii. In the case of animals of a hibernating or migratory species, to hibernate or migrate; or
b. to affect significantly the local distribution or abundance of the species to which they belong.

Under the law, a bat roost is any structure or place used for shelter or protection e.g. A building, bridge or tree. Bats use many roost sites and feeding areas throughout the year and they tend to re-use the same roosts for generations.

ERIC provided 171 records of bats within 2km of the site, up from 40 records in 2017. In total 29 records of bat roosts were returned from within 2km of the site. Species records include common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared *Plecotus auritus*, whiskered/Brandt's *Myotis mystacinus/brandtii* and noctule *Nyctalus noctule*. The nearest record of a confirmed bat roost is located in Greenhaugh, approximately 1.4km north east of the site dating from 2016. The roost consists of approximately 26 common pipistrelle, 20 soprano pipistrelle and eight brown long-eared bats

Redmire Bridge has multiple mortar gaps and cracks within the stonework which have the potential to provide roosting spaces for bats. Many of the trees along the riverbank also have the potential to support roosting bats.

Badger (*Meles meles)*

Badgers receive strict protection under the Protection of Badgers Act 1992, which makes it an offence to wilfully kill, injure or take a badger or interfere with a badger sett by damaging a sett or any part thereof. It is also an offence to wilfully destroy a sett, obstruct access to a sett or disturb a badger while occupying a sett. The 1992 Act defines a badger sett as 'any structure or place, which displays signs indicating current use by a badger'. Work that disturbs badgers whilst occupying a sett is illegal without a licence.

Badgers are largely nocturnal, omnivorous mammals and live predominately in social groups within setts. They are territorial, marking the borders of the territory with dung which is deposited in latrines or boundary dung pits. Territories occupied by a badger group or 'clan' can be between 14 and 300 ha in size dependant on the quality of the habitats present, with a cited average of 50 ha (Neale and Cheeseman, 1996). Badger territories will usually include a wide range of habitats and favour areas with a mosaic of habitats that include woodland, pasture and arable land and will locate their setts in a variety of habitats including woodland (deciduous, coniferous and mixed), scrub, hedgerows, orchards, quarries, sea cliffs, moorland, open fields and downland, although they show a marked preference for wooded areas.

The site offers potential suitable foraging habitat for badger mainly consisting of broad-leaf woodland. ERIC data revealed eight records of badger within 2km of the site between 1977 and 2018. The 2018 record is of a dead badger on the road at Lanehead, less than 500m from Redmire Bridge. A badger latrine and signs of foraging were discovered during the 2017 survey, with further signs of foraging as well as a potential sett being discovered in 2020 (Target Note 3 & 4).

Red Squirrel (*Sciurus vulgaris*)

Red Squirrels have been declining in Britain for many decades, largely as a consequence of the introduction of the Grey Squirrel *Sciurus carolinensis*. They currently receive full protection under the Wildlife & Countryside Act 1981 (as amended).

Red Squirrels and their resting places are fully protected in Britain; it is an offence to deliberately capture, injure or kill a Red Squirrel, or to damage, destroy or

obstruct their breeding or resting places. It is also an offence to disturb them whilst in their breeding or resting places.

Red squirrels are adapted for living and moving around in trees and are able to exploit various types of woodland. Food sources may include ripe tree seeds and nuts, berries and fruits, fungi, shoots, flowers, bark, lichens and invertebrates. Red squirrels live in either a dense ball of twigs and leaves located in the branched fork of a tree or against a tree trunk called a drey or a hollow in a tree called a den. Northumberland has a nationally important population of red squirrel with 9 of 16 red squirrel reserves established across the north of England to conserve the species located within the county.

Red squirrels are listed as a UK priority species (UK BAP, 2007) and also features as a Species of Principle Importance under Section 41 of the NERC Act (2008). The species are also listed within Northumberland BAP (Northumberland BAP, 2010).

A total of 47 records of red squirrel were returned from ERIC NE. The most recent record is associated with Lanehead recorded in 2014 approximately 300m from the bridge. Numerous records exist from Greenhaugh, approximately 1.5km north east of the bridge. Due to the proximity and the date of these records, it is likely that red squirrels frequent the wooded area as it may serve as a corridor to wider habitats to the north.

Riparian mammals

Otter *Lutra lutra* is fully protected through its inclusion in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and in Schedule 2 of The Conservation (Natural Habitats, &c.) Regulations 1994 as a European protected species. It is an offence under the Wildlife and Countryside Act 1981 (sections 9(1) and 9(4), Schedule 5) to intentionally kill, injure or take any wild animal included on Schedule 5. Under Section 9(4) it is an offence to damage or destroy or obstruct access to, any structure or place which any wild animal include in Schedule 5 uses for shelter or protection, or disturb any such animal while it is occupying a structure or place which it uses for that purpose. The term given to places of shelter or protection for otters includes ‘holt’, ‘couch’ and ‘den’. These terms all have slightly different origins and meaning, but all are related to places of shelter. Otter is also included as a priority species in the UK BAP.

Water vole *Arvicola terrestris* received habitat protection in 1998 through inclusion on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) in respect of Section 9(4) only. Under Section 9(4) it is an offence to damage or destroy or obstruct access to, any structure or place which any wild animal include in Schedule 5 uses for shelter or protection, or disturb any such animal while it is occupying a structure or place which it uses for that purpose. Water vole is included in the UK BAP.

Otters have been recorded as exploiting virtually all types of waterway in the UK including fresh water and estuarine sites and ranging in size from ditches and ponds to rivers and reservoirs (Chanin, 2003). Riparian habitat for otters however requires adequate food resources (*e.g.* fish, amphibians, crayfish) and suitable shelter (typically trees, shrubs along watercourses and potential den sites). Water voles are typically associated with slow-flowing water ways and water bodies without extreme water level fluctuations. Water voles prefer sites with a bank profile (soft soil to permit excavation) that shows a stepped or steep incline into which the vole can burrow and create nest chambers above the water table. The amount of bank side and emergent vegetation cover is very important, with the best sites offering a continuous swathe of tall and luxuriant riparian plants (waterside vegetation of grasses, sedges and rushes, rhizomes, bulbs and roots of herbaceous plants). Sites excessively shaded by shrubs or trees are less favourable (Strachan and Moorhouse, 2006).

During the 2016 survey, signs of otter spraint were noted approximately 15m from the bridge. ERIC provided 26 records of otter from 1992 – 2016 within 2km of the site. The nearest record (excluding that which was provided by Total Ecology in 2016) is approximately 650m east of the site adjacent to a bridge by the banks of the River North Tyne. During the 2020 survey otter spraint was again noted on a rock on the northern riverbank approximately 20m east of the bridge, with another spraint noted on the bridge itself on the grass verge (Target Note 2).

The site provides some suitable habitat for water voles with food sources and opportunities for burrow creation. No records of water voles were returned by ERIC, however.

Fish

A number of fish species, including the European eel *Anguilla anguilla*, river lamprey *Lampetra fluviatilis,* sea lamprey *Petromyzon marinus,* brook lamprey *Lampetra planeri,* Atlantic salmon *Salmo salar* and sea/brown trout *Salmo trutta*, are species of principle importance for the purpose of conservation of biodiversity under the Natural Environment and Rural Communities Act (2006), and should be taken into consideration by local authorities when determining planning applications.

Northumberland's rivers and streams are important locations for migratory salmonids in the UK. The gravels of the upland streams provide ideal breeding habitats and the good water quality supports both the diversity and richness of aquatic invertebrates needed as a food source.

Atlantic salmon and sea trout spend the early part of their lives in freshwater, defending the territories provided by the broken water of the gravels and boulders of the upland streams. Both species migrate to the sea once they are about two years old, only returning to rivers to breed. Spawning occurs in excavations in the gravel of the river bed. Brown trout differ to sea trout as they do not migrate, despite having exactly the same requirements and being genetically the same (Northumberland BAP, 2008).

Common or European eels are catadromous meaning they migrate from freshwater out to the ocean to reproduce. The European eel is found throughout the UK in streams and rivers, but has undergone a significant decline since 1980, due to overfishing, introduced parasites and the construction of dams and weirs which block migratory routes from rivers to the sea and cause fatalities in hydro-electric turbines (Freyhof J and Kottelat M, 2010). They are most often found on the floor of the river or estuary they are living in.

All three species of lamprey are found in UK rivers and are widely distributed throughout the British Isles. Both sea and river lampreys are anadromous, with adults typically inhabiting coastal and offshore waters (Maitland *et al*. 1994). The brook lamprey is a non-parasitic species that spends its whole life cycle in fresh water. All three species spawn in fresh waters, and juveniles of all three species, known as ammocoetes, are found within the same catchments, using similar microhabitats, but with varying geographical distribution. Sea lampreys are

typically found in the lower reaches of rivers, while river and brook lamprey are more closely associated with the middle and upper catchment, where their ranges often overlap. Lamprey show a preference for gravel-dominated substratum for spawning, and mainly silt and sand dominated substratum for nursery habitat. Other important environmental characteristics for optimal ammocoete habitat are shallow waters with low water velocity, and the presence of organic detritus and/or plant material. Spate rivers, with high flow velocities, tend to support fewer ammocoetes because they contain smaller areas of stable sediment (Harvey J and Cowx I, 2003).

ERIC provided a total of 49 records of fish within 2km of the bridge. These include European eel *Anguilla anguilla*, Atlantic salmon *Salmo salar* and brown trout *Salmo trutta subsp. Fario* records from within Tarset Burn itself (all from approximately 100m south of the bridge), in addition to lamprey *Lampetra sp* and brook lamprey *Lampetra planeri* records from. These records typically date from the 1990's.

The Tarset Burn consists of a fast-flowing watercourse approximately 30m wide with a stony substrate. It is possible that species of eel, lamprey, trout and salmon may utilise the burn.

White-clawed crayfish (*Austropotamobius pallipes*)

White-clawed crayfish are classified as Endangered in the IUCN Red List of Endangered Species and their populations are declining throughout much of their range with predictions that the species will face extinction in much of their former range within the next few decades. White-clawed crayfish populations are under threat in Britain and Ireland from a fungal disease, crayfish plague *Aphanomyces astac*i, carried by a number of introduced North American species of crayfish, and competition from alien crayfish populations.

White-clawed crayfish are protected under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). Under this Act, it is an offence to:

- Intentionally take white-clawed crayfish from the wild;
- Sell, or attempt to sell, any part of a white-clawed crayfish, alive or dead, or advertise that one buys or sells, or intends to buy or sell any part of a white-clawed crayfish.

White-clawed crayfish in England are also listed under Section 41 of the Natural Environment and Rural Communities Act (2006) and as such is a priority species for conservation. Government policy dictates that local planning authorities consider such species when determining planning applications.

The white-clawed crayfish occurs in areas with relatively hard, mineral-rich waters on calcareous and rapidly weathering rocks. They are found in a wide variety of environments, including canals, streams, rivers, lakes, reservoirs and water-filled quarries. The white-clawed crayfish is typically found in watercourses of 0.75m to 1.25m deep, but the species may occur in very shallow streams (about 5cm of water) and in deeper, slow-flowing rivers (2.5m). The white-clawed crayfish typically occupies cryptic habitats under rocks and submerged logs, among tree roots, algae and macrophytes, and holes in undercut banks. It emerges to forage for food, mainly at night. Juveniles in particular may also be found among cobbles and detritus such as leaf litter. Adults may burrow into suitable substrates, particularly in the winter months.

The Tarset Burn consists of a relatively shallow watercourse with a stony substrate and some areas of undercut bankside suitable for this species. No records of white-clawed crayfish were returned for within 2km of the site, however.

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Habitats

Ten main habitat land categories were identified on site under the Phase 1 system of habitat description. The survey was centred on Redmire Bridge itself prior to repair works being carried out. The bridge is of sandstone construction and carries a minor, single track tarmac road. The bridge has many features that have the potential to be used by roosting bats and birds. Beneath the bridge flows the Tarset Burn, a tributary of the River North Tyne, from roughly north east to south west. The burn is lined with broad-leaved woodland, which constitutes a Northumberland BAP habitat. The burn has potential to support riparian mammals, fish and white-clawed crayfish, with the presence of otter in the vicinity of the bridge being confirmed via spraint. The woodland and the bridge supported evidence for the presence of badgers. Adjacent habitats recorded include sheep grazed improved grassland, a semi-improved grassland (previously recorded as improved), tall ruderal vegetation present along the roadside, a ditch which flows into the Tarset Burn, as well as fences, hardstanding and walls. The proposed works are likely to impact upon the bridge and potentially the woodland/trees closest to the bridge.

5.2 Bats

Redmire Bridge contains numerous gaps that may provide roosting opportunities for bat species. As the proposed works include a number of masonry repairs, it is recommended that a minimum of three nocturnal surveys are carried out during the main bat activity season (May – September inclusive) by suitable qualified ecologists under appropriate weather conditions as per current guidelines (BCT, 2016).

5.3 Other Protected species

Birds – It is an offence to intentionally or recklessly disturb birds close to their nest during the breeding season. The site was surveyed in January, which is outside the main nesting season. A number of features, such as gaps in the bridge could provide nesting opportunities. A dipper box is located under an arch on the bridge, though there were no signs of use and the box appeared to be in a state of disrepair, though it couldn't be inspected closely. Therefore, work should be undertaken outside of the main nesting season (March-August). Alternatively, an experienced ecologist should check the bridge and any nearby trees for nests before any work is undertaken.

Badgers – A possible sett was discovered within the woodland to the west of the bridge, though it appeared disused and potentially flooded. Signs of badger in the form of snuffle holes and other signs of feeding were found on the bridge itself and along the roadside. A full badger survey is recommended in order to ascertain the extent that the area is used by badgers prior to works taking place.

Riparian mammals – This section of the Tarset Burn is considered to provide suitable foraging habitat for otter, with habitats suitable for holt creation both up and down stream of the bridge. Otter spraint was noted during the 2016 survey and again during the 2020 survey, both spraints were on a rock approximately 15m to the east of the bridge, on the northern bank of the river. Otter spraint was also found in the grass verge on the bridge itself. No signs of water vole were observed during the survey, however the site provided suitable habitat with food sources and opportunities for burrow creation. Therefore, an otter and water vole absence/presence survey is recommended before works take place.

Red Squirrel – Due to the proximity of records returned from ERIC and the habitats present within close proximity to the bridge, a red squirrel absence/presence survey is recommended.

Other mammals – It is likely that smaller mammals such as mice and shrews also use the site. As such, working methods should be followed to ensure that all mammals are safeguarded. This includes safe storage of materials that may be poisonous to mammals and the covering of any steep-sided excavations at night (or a ramp placed inside the excavation) to allow egress to any mammals that may become trapped.

White-clawed Crayfish – No evidence of white-clawed crayfish was noted during the survey, however due to the suitable substrates for the crayfish to utilise, it is considered that a white-clawed crayfish survey should be carried out prior to any works taking place.

Fish – The proposed works include maintenance and repair works to the bridge. It is highly unlikely that the proposed works will significantly disrupt the flow of the river and therefore further surveys are not deemed necessary. To minimise

disruption of the life cycle of spawning fish in rivers, is it recommended that no works take place in October through to December (this is based on the typical Salmon spawning timings).

Pollution Prevention – It is recommended that general pollution prevention guidance is adopted during works where necessary to prevent pollutants entering the watercourse. All contractors should be fully briefed on the pollution control measures to be adopted on site and importance of not allowing waste materials or pollutants to enter the watercourse. Any pollution incidents such as fuel spillage, discharge of contaminated or silt-laden run-off to a watercourse, or disturbance to the riverbed should be immediately reported to the EA Incident Hotline on 0800 80 70 60.

5.4 Potential Ecological Enhancements

The National Planning Policy Framework (NPPF) outlines government planning policies and how they should be applied within local authorities. The framework places an emphasis on sustainable development, encouraging the re-use of land that has previously been developed in preference to using land that has a higher environmental value and by minimising impacts on biodiversity. The NPPF states that developments should aim to conserve or enhance biodiversity and encourages opportunities to incorporate biodiversity in and around developments.

Taking the requirements of the NPPF into account, opportunities should be sought where possible for nature conservation enhancement at this site. As further survey work is required, recommendations for the site fall outside the scope of this report and will be provided following the completion of the recommended surveys.

6.0 REFERENCES

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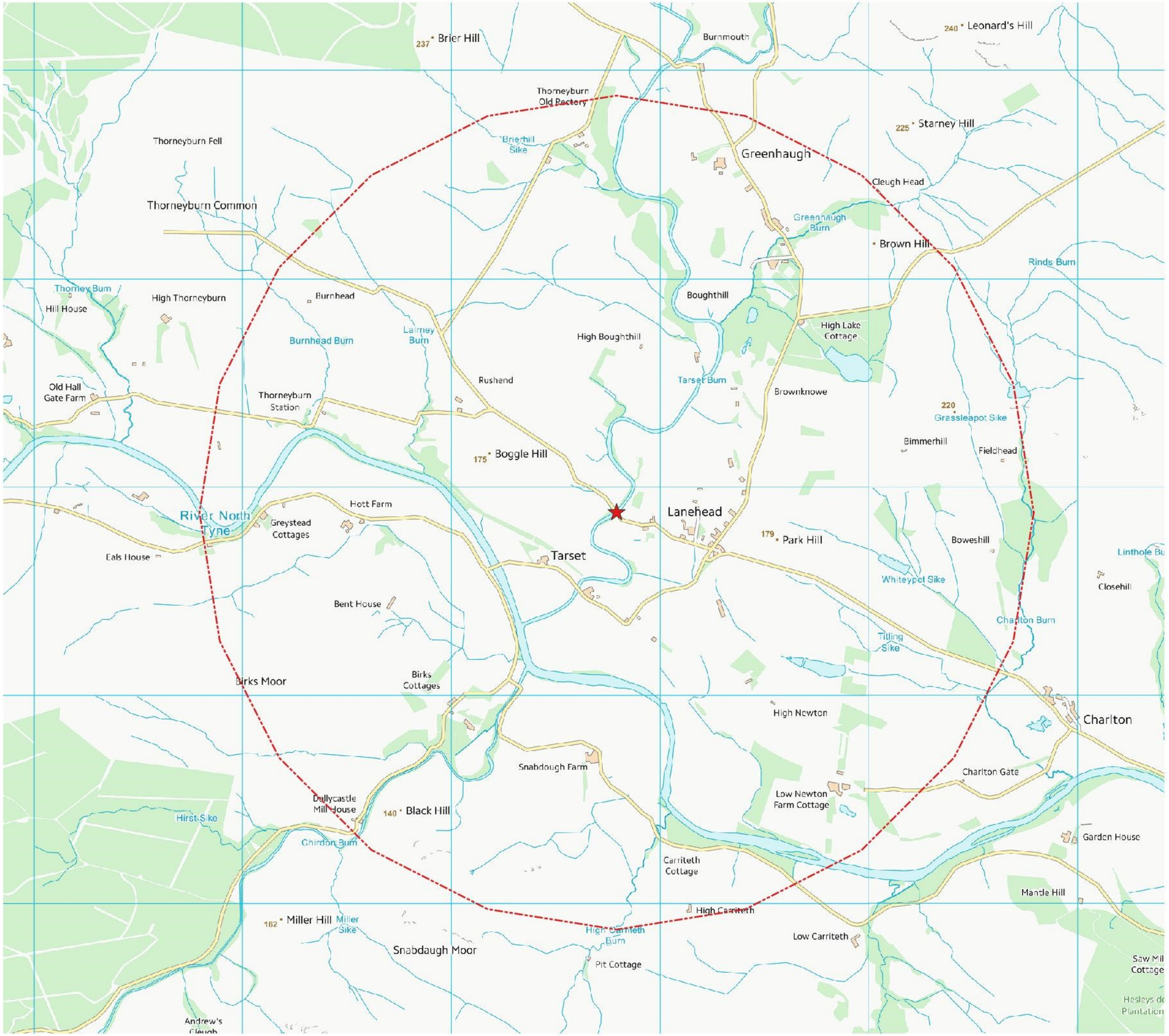
APPENDIX A

Figures



Legend

- Site Location
- 2km Buffer

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Project	Redmire Bridge, Northumberland
Title	Site Location
Client	Northumberland County Council
Date	22nd January 2020
Ref	Figure 1

Legend

★ Site Location

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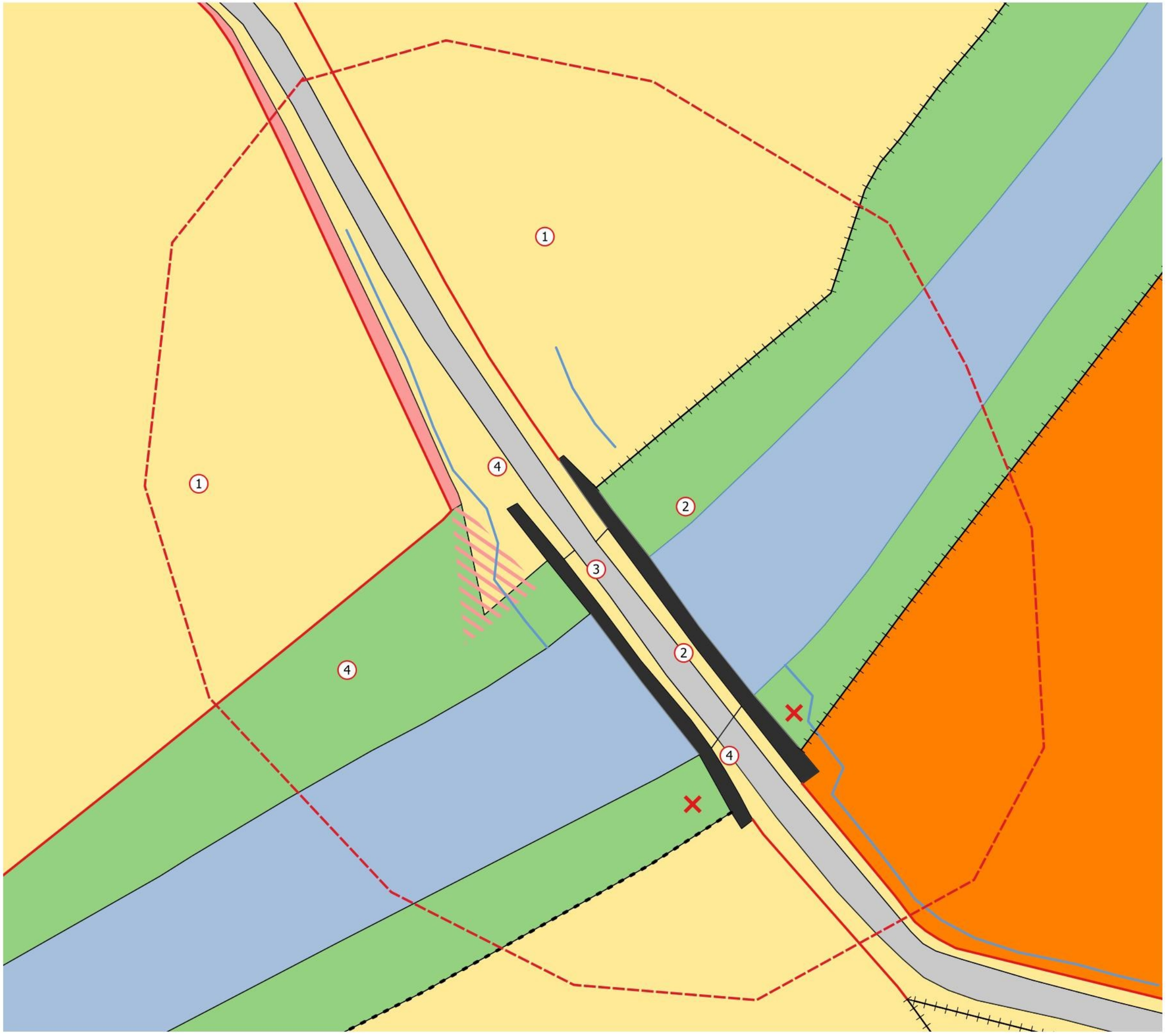
Project	Redmire Bridge, Northumberland
Title	Aerial Image Showing Surrounding Habitat
Client	Northumberland County Council
Date	22nd January 2020
Ref	Figure 2



Legend

- Target Notes
- Moderate/High Risk Trees

Boundaries

- Survey Boundary
- Fence
- Fence (collapsed/removed)
- Wall

Habitat Category

- Hardstanding
- Built Structure
- Running Water
- Improved Grassland
- Semi-Improved Grassland
- Broad-leaved Woodland
- Tall Ruderal Vegetation
- Tall Ruderal Mosaic
- Ditch

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Project	Redmire Bridge, Northumberland
Title	Phase 1 Habitat Map
Client	Northumberland County Council
Date	24th January 2020
Ref	Figure 3

APPENDIX B

Selected Photographs

Photograph 1 Overview of hardstanding minor road and improved grass verge over Redmire Bridge.

Photograph 2 Overview of north eastern, sheep grazed improved field showing extensive inundation and *Juncus* growth.

Photograph 3 Overview of north western, improved field with inundation towards the centre (wall and tall ruderal vegetation in foreground).

Photograph 4 Overview of semi-improved south eastern field.

Photograph 5 Overview of Tarset Burn and broad-leaved woodland, looking north east.

Photograph 6 Examples of failing brick-work and crevices in bridge.

Photograph 7 Badger snuffle holes on grass verge of bridge.

Photograph 8 Otter spraint on a rock on the northern riverbank, approximately 15-20m east of the bridge.

Photograph 9 Alder tree showing features that may be utilised by roosting bats (peeling bark, rot holes).

APPENDIX C
Report Conditions

Total Ecology Ltd

REPORT CONDITIONS

Redmire Bridge, Lanehead, Northumberland

This report is produced solely for the benefit of Northumberland County Council and no liability is accepted for any reliance placed on it by any other party unless specifically agreed in writing otherwise.

This report is prepared for the proposed uses stated in the report and should not be used in a different context without reference to Total Ecology. In time improved practices, fresh information or amended legislation may necessitate a re-assessment. Opinions and information provided in this report are on the basis of Total Ecology using due skill and care in the preparation of the report.

This report refers, within the limitations stated, to the environment of the site in the context of the surrounding area at the time of the inspections. Environmental conditions can vary and no warranty is given as to the possibility of changes in the environment of the site and surrounding area at differing times.

This report is limited to those aspects reported on, within the scope and limits agreed with the client under our appointment. It is necessarily restricted and no liability is accepted for any other aspect. It is based on the information sources indicated in the report. Some of the opinions are based on unconfirmed data and information and are presented as the best obtained within the scope for this report.

Reliance has been placed on the documents and information supplied to Total Ecology by others but no independent verification of these has been made and no warranty is given on them. No liability is accepted or warranty given in relation to the performance, reliability, standing etc of any products, services, organisations or companies referred to in this report.

Whilst skill and care have been used, no investigative method can eliminate the possibility of obtaining partially imprecise, incomplete or not fully representative information. Any monitoring or survey work undertaken as part of the commission will have been subject to limitations, including for example timescale, seasonal and weather related conditions.

Although care is taken to select monitoring and survey periods that are typical of the environmental conditions being measured, within the overall reporting programme constraints, measured conditions may not be fully representative of the actual conditions. Any predictive or modelling work, undertaken as part of the commission will be subject to limitations including the representativeness of data used by the model and the assumptions inherent within the approach used. Actual environmental conditions are typically more complex and variable than the investigative, predictive and modelling approaches indicate in practice, and the output of such approaches cannot be relied upon as a comprehensive or accurate indicator of future conditions.

The potential influence of our assessment and report on other aspects of any development or future planning requires evaluation by other involved parties.

The performance of environmental protection measures and of buildings and other structures in relation to acoustics, vibration, noise mitigation and other environmental issues is influenced to a large extent by the degree to which the relevant environmental considerations are incorporated into the final design and specifications and the quality of workmanship and compliance with the specifications on site during construction. Total Ecology accept no liability for issues with performance arising from such factors

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